

GENERAL CONSTRUCTION NOTES:

INSTALLATION AND CONSTRUCTION SHALL CONFORM TO THE DEPARTMENT OF TRANSPORTATION STANDARDS SPECIFICATIONS SECTIONS APPLICABLE, STANDARD PLANS DATED AND EFFECTIVE FOR THE CURRENT YEAR, AND ANY SPECIAL MUNICIPALITY CODE PROVISIONS.

1. THE LOCATION OF ALL EXISTING UNDERGROUND UTILITIES IS APPROXIMATE. THE SUBCONTRACTOR SHALL DETERMINE THE LOCATION AND DEPTH OF ALL UTILITIES INCLUDING THOSE NOT SHOWN ON PLANS AND VERIFY ALL JOB SITE CONDITIONS, HAND EXCAVATE FOUNDATION UNTIL CLEAR OF ALL SUBSTRUCTURES AND PROTECT ALL FACILITIES DURING CONSTRUCTION. SUBCONTRACTOR SHALL MAKE ALL NECESSARY ARRANGEMENTS FOR UNDERGROUND UTILITY REMOVAL OR RELOCATION WITH RESPECTIVE UTILITY OWNERS AS MAY BE REQUIRED SUFFICIENTLY IN ADVANCE TO PREVENT DELAY IN OPERATIONS.
2. THE SUBCONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO UNDERGROUND UTILITIES ENCOUNTERED IN AREAS WHERE EXCAVATIONS ARE INDICATED AND SHALL REPAIR ANY SUCH DAMAGE AT OWN EXPENSE. WHERE UTILITY LINES MUST BE MAINTAINED UNDER STRUCTURE, THEY SHALL BE PROPERLY SLEEVED THROUGH FOUNDATION.
3. THE SUBCONTRACTOR SHALL BE RESPONSIBLE FOR REPLACEMENT OR REPAIR OF ANY DAMAGE CAUSED BY THEM OR THEIR SUBCONTRACTORS.
4. THE SUBCONTRACTOR SHALL OBTAIN AND PAY FOR ALL REQUIRED PERMITS AND NOTIFY ALL UTILITIES AND THE CITY AT LEAST 72 HOURS IN ADVANCE OF CONSTRUCTION.
5. THE SUBCONTRACTOR SHALL CALL THE TRANSPORTATION TRAFFIC DIVISION, FIVE (5) DAYS PRIOR TO THE START OF WORK FOR A TRAFFIC CONTROL PLAN APPOINTMENT
6. THE SUBCONTRACTOR IS REQUIRED TO SUBMIT A WEEKLY SCHEDULE PRIOR TO START OF WORK EACH WEEK. (NO EXCEPTIONS)
7. POLE MOUNTED DETECTOR AND EQUIPMENT LOCATIONS SHALL BE AS DEPICTED ON SITE PLAN. THE SUBCONTRACTOR SHALL VERIFY EQUIPMENT FIELD LOCATIONS WITH THE ACS IMPLEMENTATION MANAGER (301) 357-9403 OR LOCAL AND/OR EXCAVATION AUTHORITY AND ACS PRIOR TO INSTALLATION.
8. THE SUBCONTRACTOR SHALL SUPPLY AND INSTALL ALL CONDUCTORS NECESSARY FOR THE INTENDED OPERATION AS NOTED ON THESE PLANS, NEC AND ALL APPLICABLE MUNICIPALITY CODES.
9. PROVIDE ANCHOR BOLT NUT COVERS IF REQUIRED DUE TO EXTERIOR INSTALLATION.
10. ALL PULLBOXES AND COVERS SHALL BE CONCRETE OR PVC AS REQUIRED BY THE MUNICIPALITY. ALL PULLBOXES SHALL BE NO. 5 UNLESS OTHERWISE NOTED OR REQUIRED BY THE MUNICIPALITY.
11. ALL CONCRETE FORMS ARE TO BE INSPECTED BY LOCAL AUTHORITIES BEFORE CONCRETE IS PLACED.
12. THE SUBCONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING AND COORDINATION WITH THE SERVING (ELECTRICAL) UTILITY COMPANY AND PAY REQUIRED FEES FOR SERVICE CONNECTIONS.
13. THE SUBCONTRACTOR TO OBTAIN A NO FEE ENCROACHMENT PERMIT FROM THE CITY PRIOR TO COMMENCEMENT OF WORK. ALL WORK SHALL BE INSPECTED BY CITY FORCES. AT COMPLETION OF PROJECT CONTACT THE CITY ENGINEER 24 HOURS PRIOR TO COMPLETION OF WORK.
14. THE SUBCONTRACTOR IS TO BUILD AND MAINTAIN A CONSTRUCTION BARRICADE. TRAFFIC CONTROLS SHALL BE PER THE LATEST TMUTCD STANDARDS TO INCLUDE THE ARROW BOARD. NO LANE CLOSURES DURING PEAK TRAFFIC HOURS.
15. ALL SUBCONTRACTORS TO PROVIDE LIABILITY INSURANCE AND WORKERS COMPENSATION BENEFITS IN ACCORDANCE WITH STATE LAW FOR ALL WORKERS AND AGENTS WHO WILL BE ON THE SITE AT ANY TIME WHILE PERFORMING WORK ON THIS PROJECT. ALL WORK SHALL BE IN ACCORDANCE WITH NEC, ALL LOCAL, STATE AND FEDERAL CODES, ORDINANCES AND ANY APPLICABLE AMENDMENTS.

16. ALL DEBRIS, EXCESS MATERIAL, ETC. IS TO BE REMOVED BY THE SUBCONTRACTOR BY THE END OF THE JOB. JOB TO BE LEFT SUFFICIENTLY CLEAN AS TO WARRANT CITY APPROVAL.
17. THE SUBCONTRACTOR SHALL BE RESPONSIBLE FOR ALL PERMITS, FEES AND INSPECTIONS AS MAY BE REQUIRED FOR COMPLETION OF THE JOB AS PER ALL GOVERNING AGENCIES.
18. THE SUBCONTRACTOR TO PROVIDE COST ESTIMATE FOR ALL WORK SHOWN ON DRAWINGS AND WORK NORMALLY REQUIRED TO CARRY OUT THE DESIGN INTENT OF THESE DRAWINGS.
19. DRAWINGS ARE NOT TO BE SCALED. WORK SHALL BE GOVERNED BY DIMENSION ONLY. DISCREPANCIES BETWEEN THE DRAWINGS AND/OR THE EXISTING SITE CONDITIONS SHALL BE BROUGHT TO THE ATTENTION OF ACS IMMEDIATELY.
20. P.R.C. EQUIPMENT SHALL NOT BE INSTALLED ON MEDIANS LESS THAN FIVE FEET (5') IN WIDTH.
21. P.R.C. RELATED EQUIPMENT SHALL NOT BE INSTALLED WITHIN FIVE FEET (5') OF FIRE HYDRANT.
22. P.R.C. RELATED EQUIPMENT SHALL NOT BE INSTALLED WITHIN FOUR FEET (4') OF ADA RAMPS.
23. SUBCONTRACTOR SHALL SUPPLY AS-BUILT DRAWINGS TO ACS ENGINEERING DEPARTMENT WITHIN THIRTY (30) DAYS OF CONSTRUCTION COMPLETION.
24. SUBCONTRACTOR SHALL COMPLETE A "RLC POST CONSTRUCTION INSTALLATION ACCEPTANCE FORM" FOR EACH RLC INSTALLED. COMPLETED FORMS SHALL BE FORWARDED TO ACS CONSTRUCTION DEPARTMENT.
25. THE SUBCONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING THE RESPECTIVE OWNERS AND OTHER AGENCIES AT LEAST 48 HOURS PRIOR TO CONSTRUCTION. CONTACT:
- * GAS COMPANY
- * WATER DISTRICT
- * PHONE COMPANY
- * CABLE COMPANY
- * LOCAL AND/OR STATE EXCAVATION AUTHORITY


SPECIFIC CONSTRUCTION NOTES:

1. THE SUBCONTRACTOR SHALL INSTALL ALL SUBSTRUCTURES ACCORDING TO LOCAL GOVERNING AGENCY FROST LINE REQUIREMENTS WHERE APPLICABLE.
2. THE SUBCONTRACTOR SHALL MODIFY ALL SIDEWALKS WHERE NECESSARY, IN COMPLIANCE WITH THE ADA STANDARDS, TO ALLOW ACCESS FOR HANDICAP PEDESTRIAN PASSAGE.

Red Light Camera Installation - General Notes & Index

INDEX OF PLANS

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SIG 4	LOOP INSTALLATION DETAILS
SIG 5	SINGLE LINE DIAGRAM
SIG 6	CAMERA UNIT TERMINAL STRIP WIRING DETAILS
SIG 7	FLASH UNIT TO CAMERA POLE WIRING DETAILS
SIG 8	PELCO POLE DETAILS
SIG 9	CAMERA UNIT/DUAL FLASH CONFIGURATION



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Prepared for:



750 Greenfield Place, Garner, NC 27529

SCALE

NONE

SR 2911 (New Bern Avenue)
at
I-440 Westbound Ramp
(Outer Loop)
Division 5 Wake County Raleigh

PLAN DATE: Jan 2009

REVIEWED BY:

PREPARED BY:

RKA PROJ. NO.: 08232 (040)

REVISIONS

INIT.

DATE

SEAL



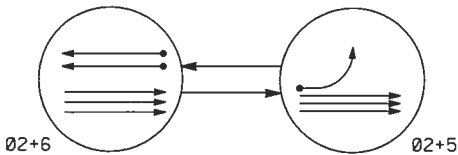
1-29-2009

SIGNATURE DATE

SIG. INVENTORY NO. 05-0296

2 Phase
Semi-Actuated
(US 64 Bus. Closed Loop Signal System)

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

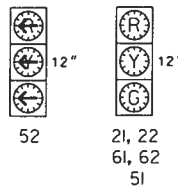
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE		
	02+5	02+6	F L C
21, 22	G	G	Y
51	G	R	R
52	R	R	R
61, 62	R	G	Y

SIGNAL FACE I.D.

Denotes L.E.D.



LOOP & DETECTOR UNIT INSTALLATION CHART
170 CONTROLLER AND CABINET

INDUCTIVE LOOPS					DETECTOR PROGRAMMING													
					NEMA PHASE	TIMING		ATTRIBUTES								STATUS		
								1	2	3	4	5	6	7	8			
LOOP NO.	SIZE (ft)	TURNS	DIST. FROM STOPBAR (ft)	NEW EXISTING		DELAY	CARRY (STRETCH)	FULL TIME DELAY	PEDESTRIAN CALL	RESERVED	COUNT	REVISION	TYPE 3	CALLING	ALTERNATE	SYSTEM	NEW	EXISTING
5A	6X60	2-4-2	0'	X	5	- SEC.	- SEC.					X	X	X				X
6A	6X6	4	300'	X	6	- SEC.	- SEC.				X	X	X	X				X
6B	6X6	4	300'	X	6	- SEC.	- SEC.				X	X	X	X				X

NOTES

- Refer to 'Roadway Standard Drawings NCDOT' dated July 2006, 'Standard Specifications for Roads and Structures' dated July 2006 and all applicable sections of the latest version of the generic Project Special Provisions. The PSP can be accessed at the following website: <http://www.ncdot.org/doh/preconstruct/traffic/itss/>
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signalsystem timing values supersede these values.
- Pavement markings are existing.
- Closed Loop System Data: Area Address 1 Local Address 6

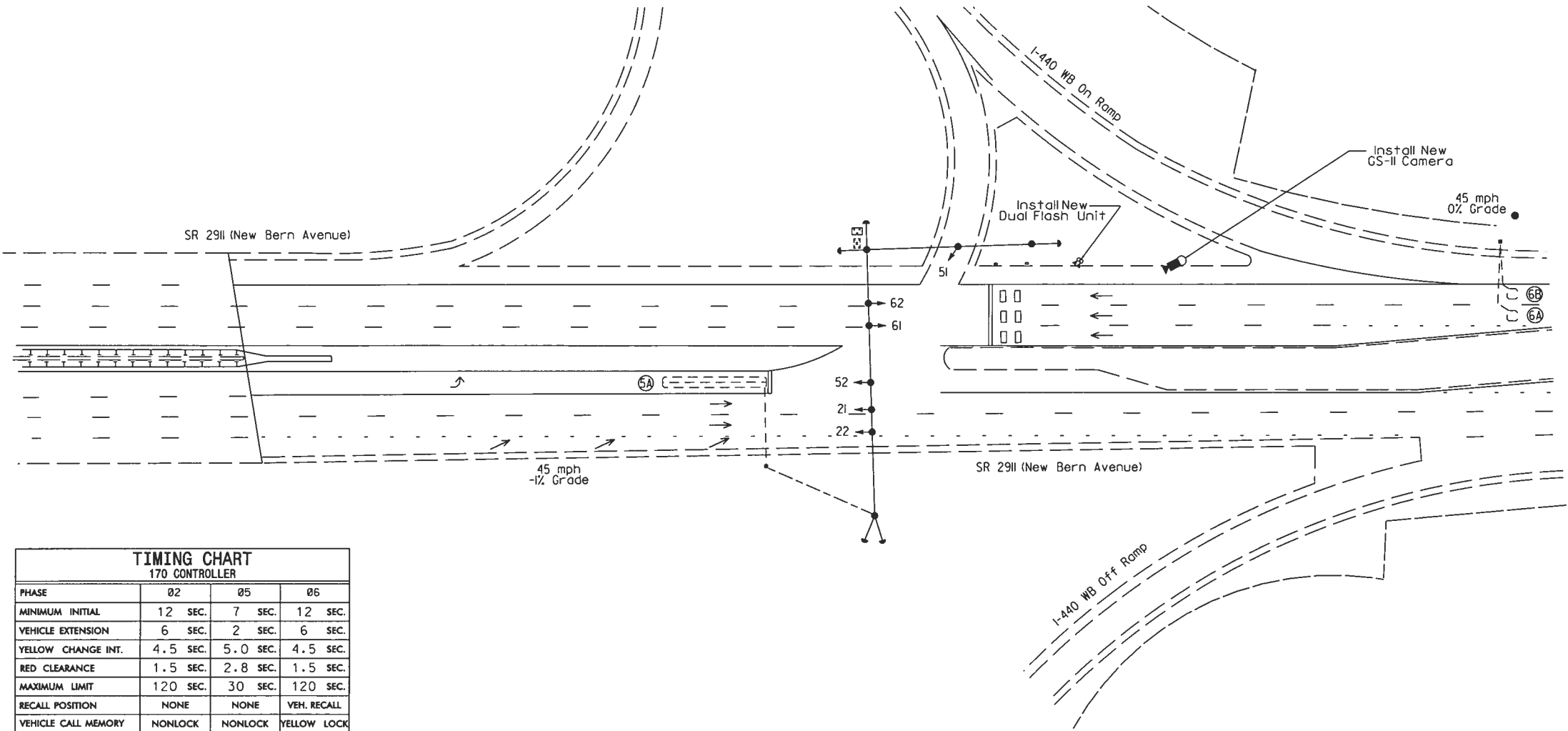
RED LIGHT CAMERA LEGEND

- Video Detection Camera
- Camera Unit
- Auxiliary Flash Assembly
- No. 5 Pullbox
- Power Pedestal

LEGEND

- | PROPOSED | EXISTING |
|-------------------------------|----------|
| Traffic Signal Head | ● |
| Modified Signal Head | N/A |
| Sign | ■ |
| Pedestrian Signal Head | ■ |
| With Push Button & Sign | ■ |
| Signal Pole with Guy | ■ |
| Signal Pole with Sidewalk Guy | ■ |
| Inductive Loop Detector | ■ |
| Controller & Cabinet | ■ |
| Junction Box | ■ |
| 2-in Underground Conduit | --- |
| N/A | --- |
| Right of Way | --- |
| Directional Arrow | → |
| Stop Bar | --- |

TIMING CHART 170 CONTROLLER			
PHASE	02	05	06
MINIMUM INITIAL	12 SEC.	7 SEC.	12 SEC.
VEHICLE EXTENSION	6 SEC.	2 SEC.	6 SEC.
YELLOW CHANGE INT.	4.5 SEC.	5.0 SEC.	4.5 SEC.
RED CLEARANCE	1.5 SEC.	2.8 SEC.	1.5 SEC.
MAXIMUM LIMIT	120 SEC.	30 SEC.	120 SEC.
RECALL POSITION	NONE	NONE	VEH. RECALL
VEHICLE CALL MEMORY	NONLOCK	NONLOCK	YELLOW LOCK
DOUBLE ENTRY	OFF	OFF	OFF
WALK	- SEC.	- SEC.	- SEC.
FLASHING DON'T WALK	- SEC.	- SEC.	- SEC.
TYPE 3 LIMIT	- SEC.	- SEC.	- SEC.
ALTERNATE EXTENSION	- SEC.	- SEC.	- SEC.
ADD PER VEHICLE	- SEC.	- SEC.	1.5 SEC.
MAXIMUM INITIAL	- SEC.	- SEC.	34 SEC.
MAXIMUM GAP	- SEC.	- SEC.	7.8 SEC.
REDUCE 0.1 SEC EVERY	- SEC.	- SEC.	1.7 SEC.
MINIMUM GAP	- SEC.	- SEC.	3 SEC.



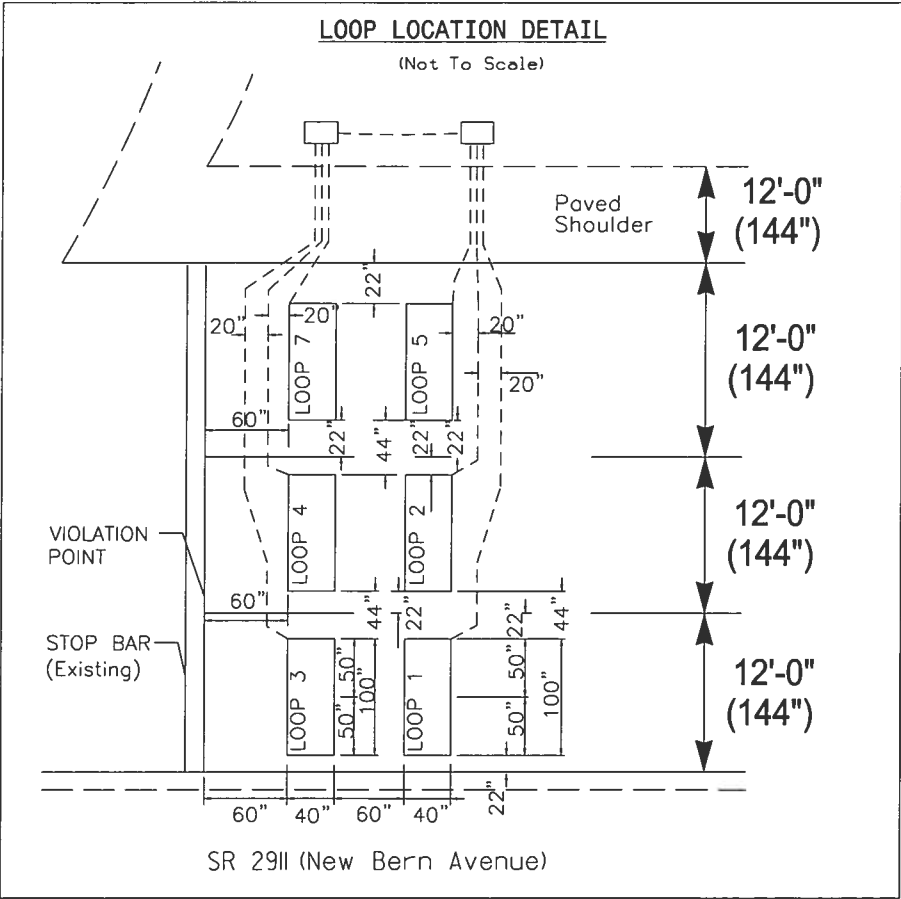
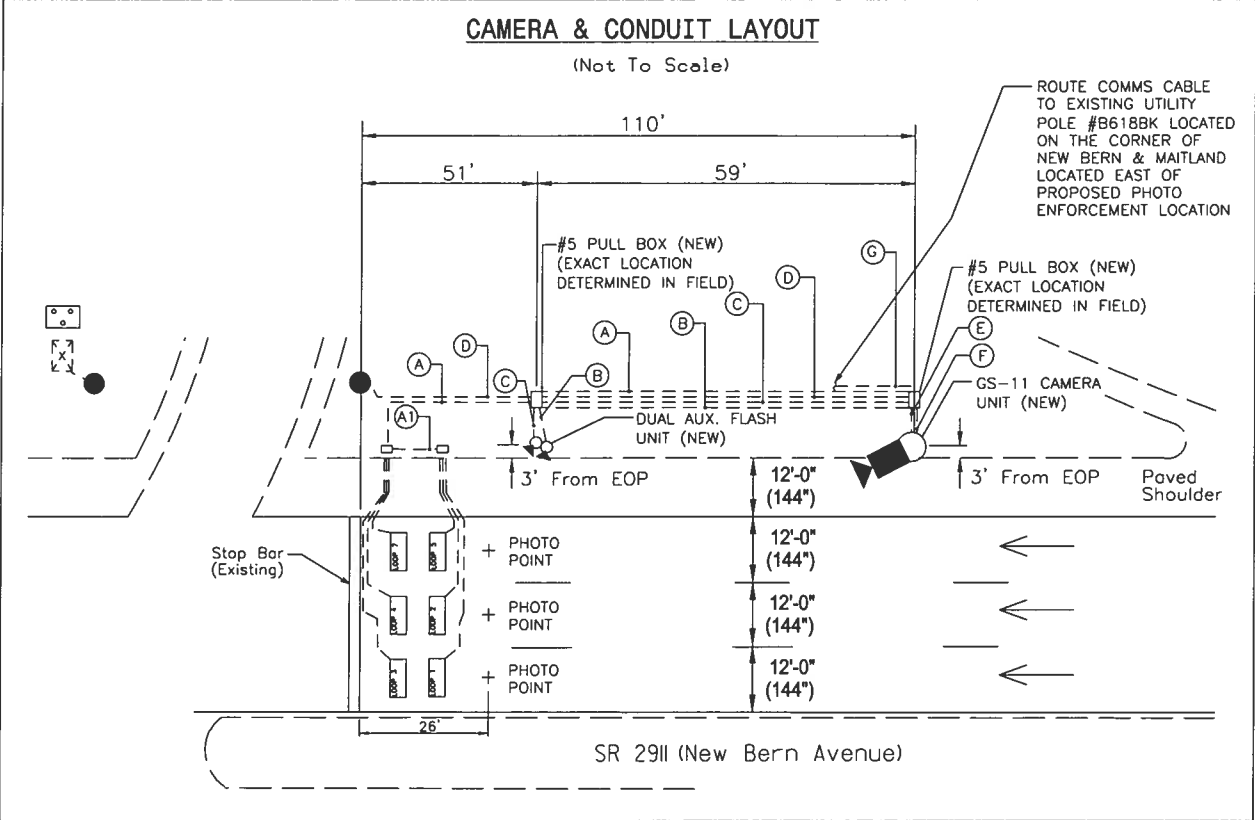
Red Light Camera Installation - Site Plan

Prepared for: 750 Greenfield Place, Garner, NC 27529	SR 2911 (New Bern Avenue) at I-440 Westbound Ramp (Outer Loop)		SEAL 1-29-2009 SIGNATURE DATE
	Division 5 Wake County Raleigh	PLAN DATE: Jan 2009 REVIEWED BY: [Signature] PREPARED BY: [Signature] RKA PROJ. NO.: 08232 (040)	

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SCALE
0 40
1"=40'



CONDUIT SCHEDULE

LETTER	CONDUIT SIZE	CONDUIT CONSTRUCTION	TYPE OF SERVICE	EQUIPMENT SERVICED	CABLE QUANTITY	CABLE DETAILS
A	2"	PVC	COMMS	LOOPS 1, 2, 3, 4, 5, 7	6	⑤
A1	2"	PVC	COMMS	LOOPS 3, 4, 7	3	⑤
B	2"	PVC	COMMS	DUAL AUX FLASH UNIT	2	④
C	2"	PVC	POWER	DUAL AUX FLASH UNIT	6	①
D	2"	PVC	POWER	CAMERA UNIT POWER, RED/YELLOW PHASE CONTROL	3	③ 3 ①
E	2"	PVC	POWER	GS-II UNIT	3	③ 9 ①
F	2"	PVC	COMMS	GS-II UNIT	2	④ 6 ⑤ 1 ④A
G	2"	PVC	COMMS	TO D-MARC LOCATION	1	④A

CABLE SCHEDULE

- ① — #14 AWG THHN
② — #12 AWG THHN
③ — #10 AWG THHN
④ — IMSA 40-2, 3 PAIR 19AWG w/ POLYETHYLENE JACKET (COMMS CABLE)
④g — CAT-5e (BELDEN 7919A OR EQUIVALENT)
⑤ — IMSA 50-2, 12 AWG
⑥ — IMSA 51-7, 14 AWG
⑦ — 12 STRAND FIBER OPTIC CABLE
⑧ — RG-59 VIDEO CABLE

RED LIGHT CAMERA LEGEND

- Video Detection Camera
Camera Unit
Auxiliary Flash Assembly
No.5 Pullbox
Power Pedestal

NOTES

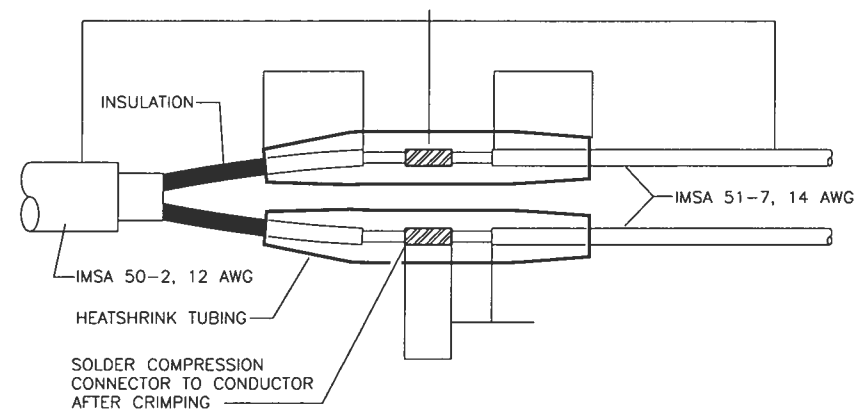
- ACS TO PROVIDE CAMERA POLE AND CAMERA UNIT, SUBCONTRACTOR TO PROVIDE PELCO FOUNDATION. POLES SHALL BE FIELD LOCATED AND SHALL BE 36" MINIMUM FROM FACE OF CURB TO CENTER OF BASE, SEE DETAIL. LOCATION OF EQUIPMENT SHALL BE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION.
- INSTALL TO LOCAL AND NEC SPECIFICATIONS.
- EACH POLE SHALL BE GROUNDED WITH #10 SOLID GROUND WIRE AND 10' GROUND ROD.
- CONTRACTOR SHALL HAND DIG POLE FOUNDATION FOR ACS CAMERA OR FLASH UNIT POLES.
- CONDUIT SHALL BE INSTALLED BY MEANS OF TRENCHING, TRENCHING SHALL BE IN ACCORDANCE TO CURRENT DOT STANDARD SPECIFICATIONS.
- CONTRACTOR SHALL MODIFY EXISTING 120VAC SERVICE, A DUPLEX OUTLET SHALL BE INCLUDED FOR ACCESS BY DOT PERSONNEL.
- INSTALL NEW PULL BOX - SEE GENERAL NOTES #10, SHEET SIG-1.
- CONTRACTOR TO CLEAN UP DEBRIS AROUND WORK AREA AND RESTORE LANDSCAPE.
- INSTALL IN-LINE FUSE HOLDERS RATED AT 20 AMPS FOR POWER.
- INSTALL IN-LINE FUSE HOLDERS RATED AT 5 AMPS FOR PHASE CONDUCTORS.
- INSTALL IN-LINE FUSE HOLDERS RATED AT 15 AMPS FOR EACH AUX FLASH POWER.
- CONTRACTOR SHALL REPAIR AND REPLACE SIDEWALK IN KIND AS REQUIRED TO INSTALL EQUIPMENT AND CONDUITS.

Red Light Camera Installation - Loop and Conduit Plan

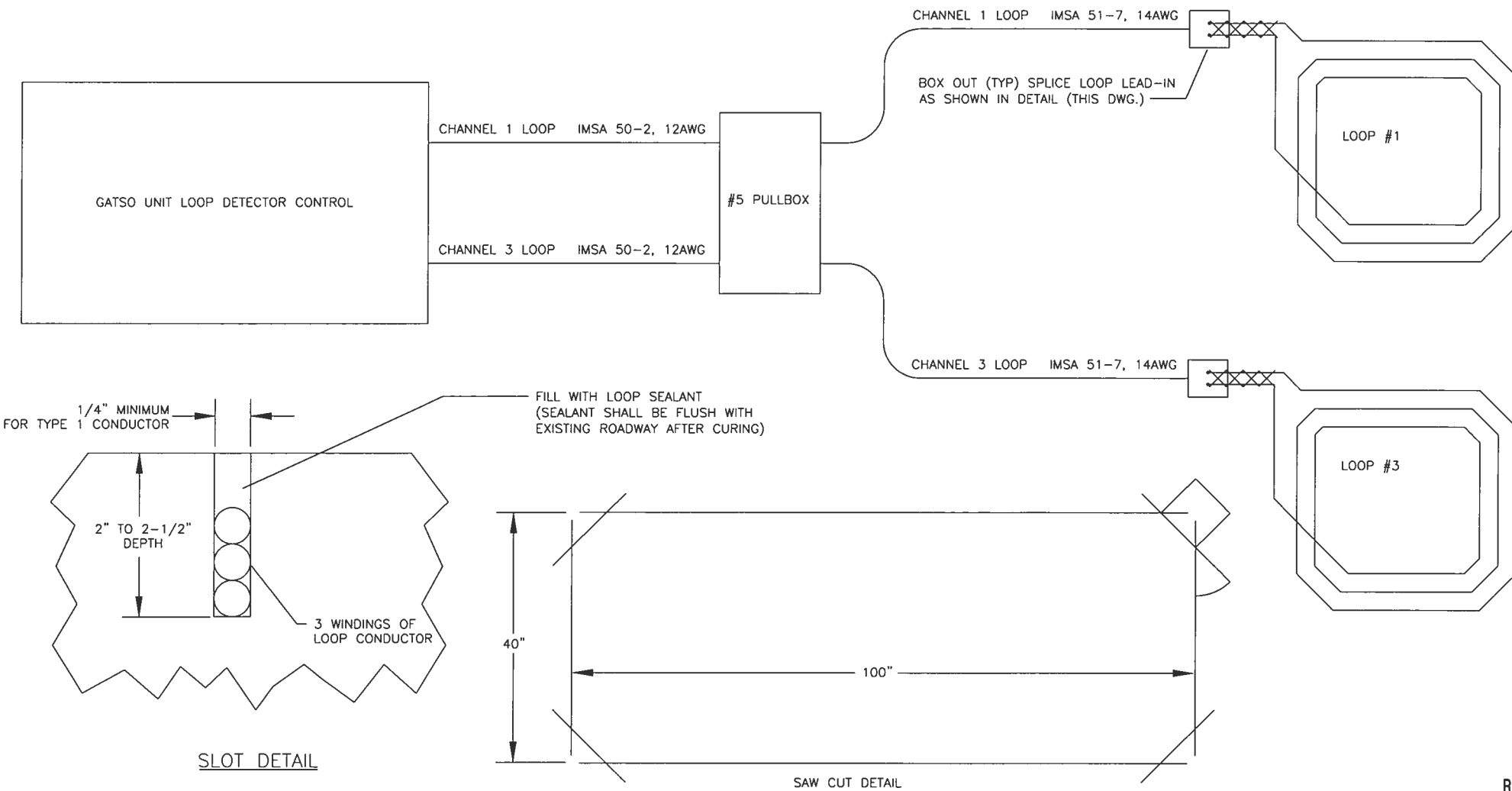
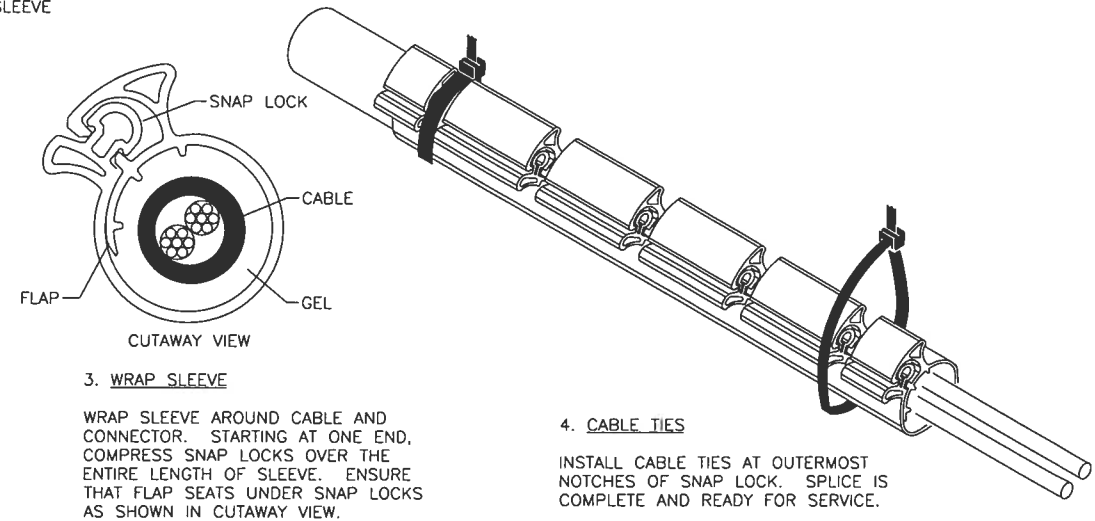
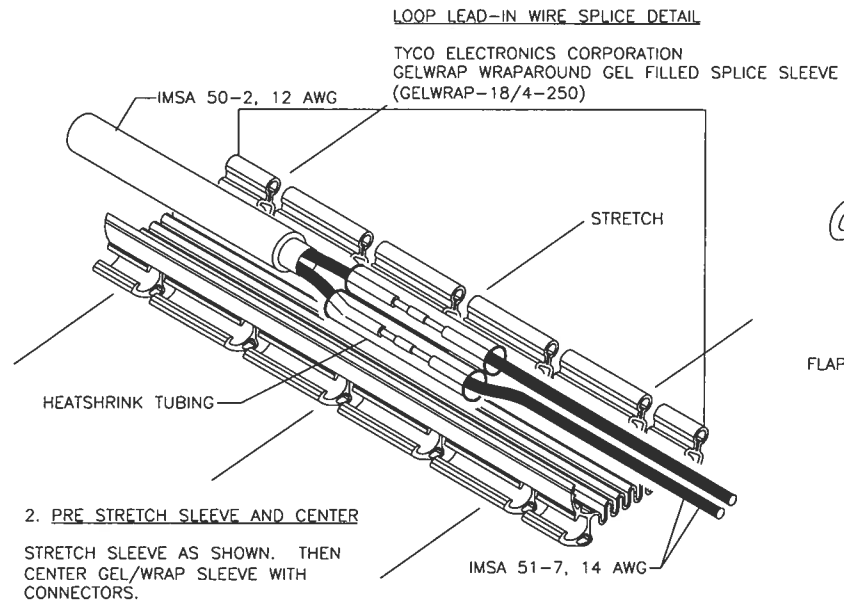
	SR 2911 (New Bern Avenue) at I-440 Westbound Ramp (Outer Loop) Wake County Raleigh		SEAL
	Division 5	PLANNED BY: Jan 2009	REVIEWED BY: [Signature]
PREPARED BY: [Signature]	RKA PROJ. NO.: 08232 (040)	INIT.	DATE
SCALE	REVISIONS	INIT.	DATE
NONE			
SIGNATURE		DATE	
SIG. INVENTORY NO. 05-0296		1-29-2009	

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1. INSTALL COMPRESSION CONNECTORS/
HEAT SHRINK & CLEAN CABLES



NOTES:

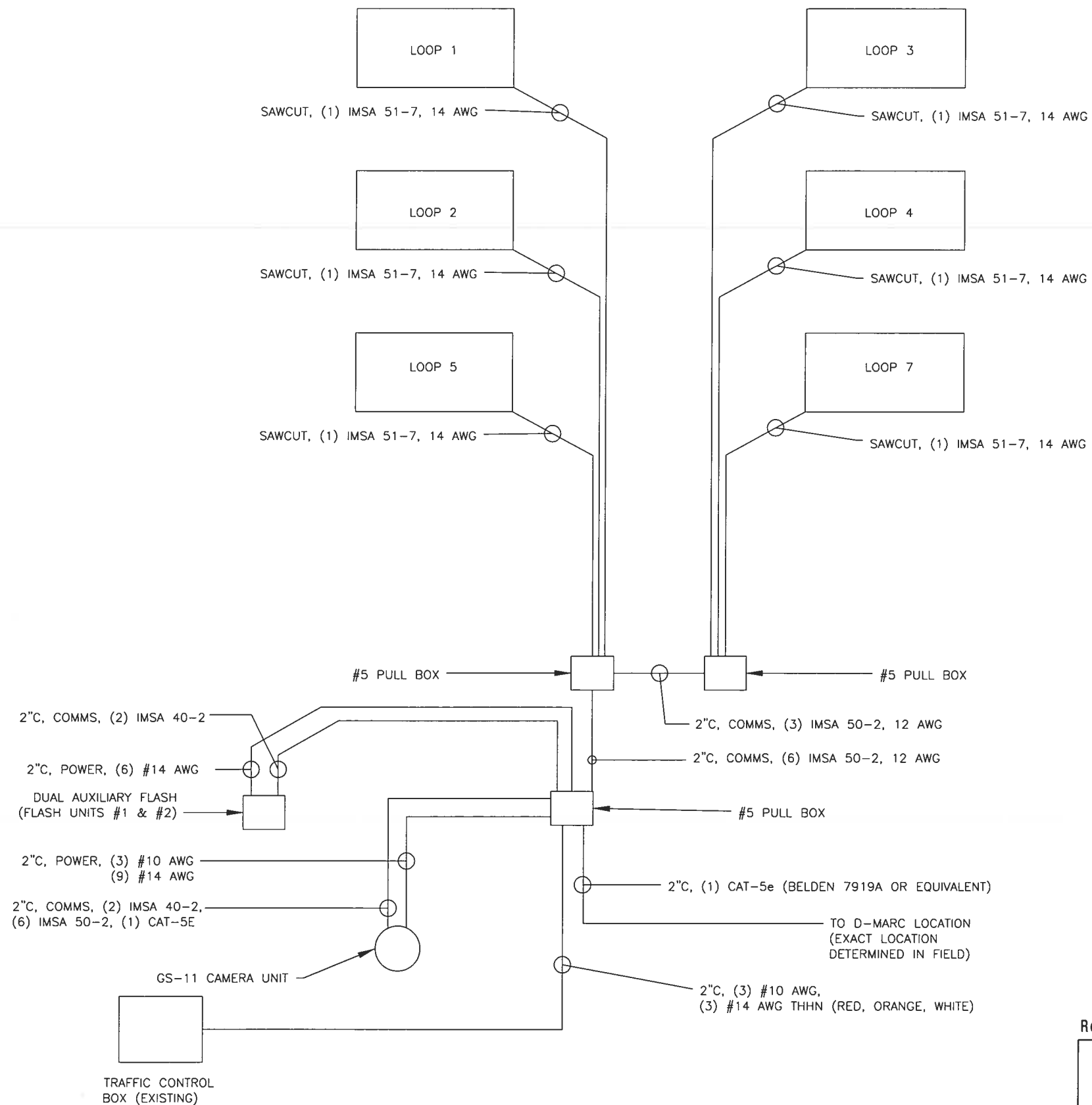
1. SAWCUT LOOP LEAD-IN WIRE TRENCH WITH A UNIFORM 1/4" WIDE SLOT WITH A DEPTH BETWEEN 2" AND 2-1/2". (SEE DETAIL)
2. CUT 6" LENGTH x 1/4" WIDE SLOTS AT THE SAME DEPTH AS STRAIGHT SAWCUTS IN EACH CORNER AS SHOWN IN DRAWING AND REMOVE ALL DEBRIS FROM SAWCUT PRIOR TO INSTALLING LOOP WIRE.
3. SPLICE IN LOOP WIRE ARE NOT PERMITTED. THERE SHALL BE 3 TURNS AS SHOWN IN DETAIL.
4. FROM THE LEAD-IN SLOT TO THE POINT OF TERMINATION TO THE IMSA 51-7, 14 AWG, THE 2 LOOP WIRES SHALL BE TWISTED WITH A MINIMUM OF 4 TWISTS PER FOOT.
5. EACH LOOP CONFIGURATION WILL BE INDIVIDUALLY CABLED TO THE RLC POLE. THE DLC CABLES TO THE RLC WILL BE KEPT AS SHORT AS POSSIBLE AND THEY WILL GO IN A STRAIGHT RUN FROM THE PULL BOX TO THE RLC POLE. THE BARE WIRED DRAIN WIRE WILL BE TERMINATED IN THE RLC POLE AT THE TERMINAL BLOCK GROUND CONNECTION.

Red Light Camera Installation - Loop Installation Details

 Prepared for: Traffic Engineering and Safety Services Section of Transportation Safety and Geometric Services 750 Greenfield Plaza, Garner, NC 27529	SR 2911 (New Bern Avenue) at I-440 Westbound Ramp (Outer Loop)		SEAL
	Division 5 Wake County Raleigh		
	PLAN DATE: Jan 2009	REVIEWED BY: [Signature]	
	PREPARED BY: [Signature]	RKA PROJ. NO.: 08232 (040)	
SCALE	REVISIONS	INIT.	DATE
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1-29-2009			
SIG. INVENTORY NO. 05-0296			

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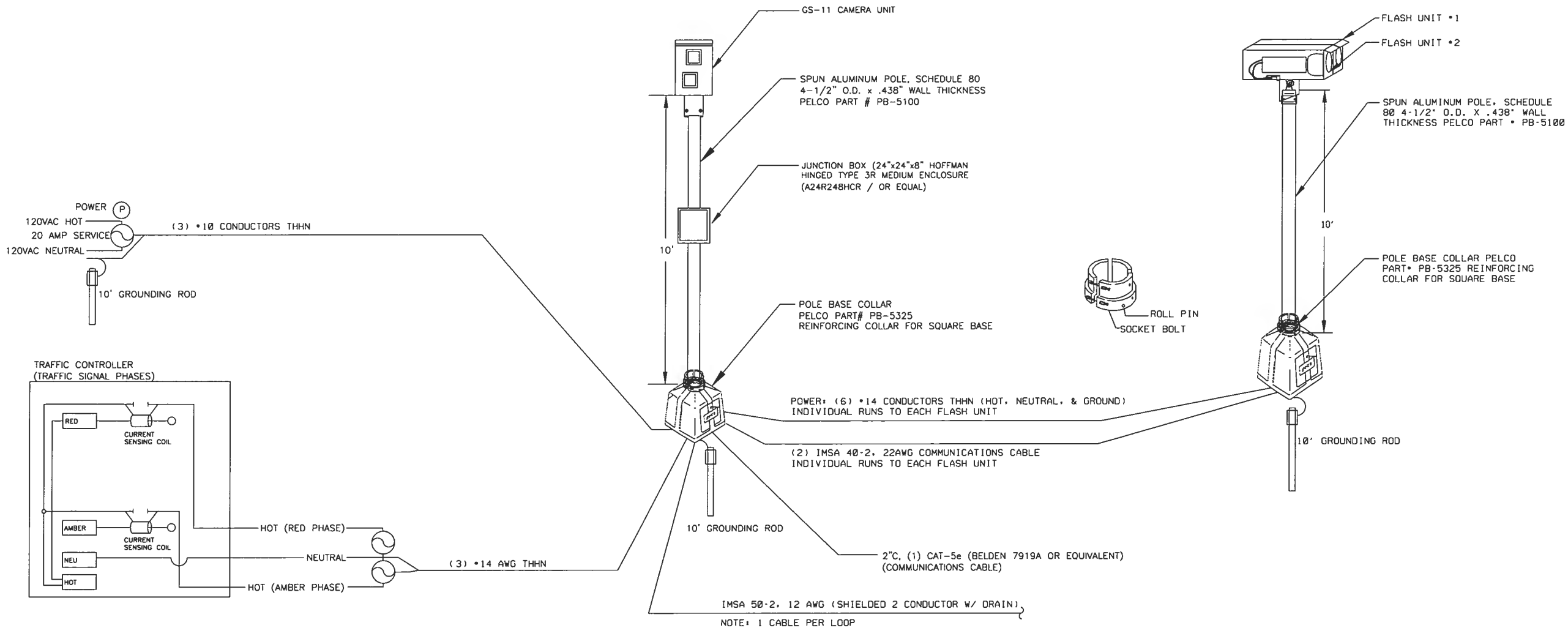


Red Light Camera Installation - Single Line Diagram


[illegible]

[illegible]

SUBCONTRACTOR MUST NOTIFY THE BELOW LISTED AGENCY AT
LEAST THREE (3) WORKING DAYS PRIOR TO COMMENCEMENT OF
EXCAVATION.
NORTH CAROLINA ONE CALL CENTER: 1-800-632-4949



Red Light Camera Installation - Camera Unit/Dual Flash Configuration

 <p><i>Prepared for:</i></p> <p>SR 2911 (New Bern Avenue) at I-440 Westbound Ramp (Outer Loop)</p>	Wake County		Raleigh
	Division 5		
	PLAN DATE: Jan 2009	REVIEWED BY: [Redacted]	
	PREPARED BY: [Redacted]	RKA PROJ. NO.: 08232 (040)	
SCALE	REVISIONS	INIT.	DATE
NONE			

SEAL

1-29-2009
 SIGNATURE _____ DATE _____
 SIG. INVENTORY NO. 05-0296